Bluetooth®
SPECIAL INTEREST GROUP

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

January 14, 2013

In the Matter of	)	
	)	
Globalstar, Inc. Petition for Rulemaking	)	
to Reform the Commission's Regulatory	)	RM-11685
Framework for Terrestrial Use of the	)	
Big LEO MSS Band	)	

INTRODUCTION

Globalstar, Inc. has petitioned the Commission for a Rule Making to "Reform the Commission's Regulatory Framework for Terrestrial Use of the Big LEO MSS Band" in RM-11685. The Bluetooth SIG has studied the proposal, and has several concerns that we would like to have addressed should the Commission decide to proceed to a rulemaking.

The Bluetooth Special Interest Group (SIG) is a not-for-profit trade association serving over 17000 member companies including the leaders in the telecommunications, computing, consumer electronics, automotive, industrial automation, and network industries. Representing very diverse devices and market segments the SIG members are devoted to drive the development of Bluetooth wireless technology, and implement and market the technology in their products.
Bluetooth wireless continues to evolve, building on its inherent strengths – small-form factor radio, low power, low cost, built-in security, ability to politely co-exist with other technologies in the unlicensed spectrum, ease-of-use, and ad hoc networking abilities. Bluetooth v4.0 unifies prior evolutionary advancements and provides manufacturers and consumers with low energy as well as and high speed features for connecting devices wirelessly. Manufacturers and consumers can choose to enable one or all of these features in Bluetooth enabled devices, depending on device functionality.

The Bluetooth SIG members are committed to enable interoperability in the market place. This is achieved via extensive testing during prototyping of the specifications, verification of product prototypes during recurring verification testing events (named Bluetooth Unplugfests) and finally through certification testing within the Bluetooth Qualification program. Via the Bluetooth Qualification program, the Bluetooth SIG has to

Bluetooth SIG | 5209 Lake Washington Blvd NE, Suite 350 | Kirkland, WA 98033 USA
Phone: +1.425.691.3535 | Fax: +1.425.691.3524 | www.bluetooth.org | www.bluetooth.com

this date completed over 25,000 product certifications, encouraging the expanded use of Bluetooth products and services in new and established markets.

The Bluetooth SIG notes that Wi-Fi Alliance has filed a response on 01/11/2013 towards the Globalstar petition. **We wish to express our support of their concerns in that response**.

Besides that we wish to register the following additional concerns:

CONCERNS

Market impact

Bluetooth SIG estimates that more than two billion Bluetooth products were shipped in 2011. By 2016 it is expected that the number of Bluetooth chipsets shipped in that single year will have increased to 4 billion. The total estimated number of Bluetooth device shipments worldwide between the year 2010 and 2016 will account for more than 17 billion. The expected growth will partly happen within already established markets such as automotive, consumer electronics and mobile phone but will also expand Bluetooth technology into emerging markets such as medical, safety, military, home security, industrial and machine to machine.
We are very concerned about the economic value and growth potential that is at risk to thousands of US companies engaged in Bluetooth technology given the Globalstar proposal and the impact that the proposal would have to the many billions of devices operating in the market already and their users.

Loss of the portion of 2.4 GHz unlicensed band, from 2473 to 2483.5 MHz

The Bluetooth SIG members manufacture unlicensed devices that use the spectrum from 2400 to 2483.5 MHz. The portion of the 2.4 GHz unlicensed band that Globalstar, Inc wants to license is extremely important to Bluetooth technology.

- The classic Bluetooth channels are spaced 1 MHz apart, starting at 2 402 MHz and finishing at 2 480 MHz.
- Bluetooth Low Energy channels are spaced 2 MHz apart, starting at 2 402 MHz and finishing at 2 480 MHz.

The 3.5 MHz between 2480 and 2483.5 MHz is used as guard band in order to not cause interference to licensed spectrum above 2483.5.
Classic Bluetooth uses all channels for connection establishment and data transfer. Bluetooth Low Energy relies on separate advertising and data transfer channels. One of three advertising channels exists in this part of the band.
Bluetooth Wireless technology employs adaptive frequency hopping behavior as means to be able to coexist with other part 15 devices. Given the channel allocation by WiFi, the spectrum of 2473 to 2483.5 MHz is important for coexistence between the two technologies.

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It takes more than a firmware upgrade to adapt products on the market

On page 3 of Appendix B it is stated that
"(a) Broad and Immediate Ecosystem – 802.11 compliant hardware is already capable of utilizing 802.11 Channel 14 with a device firmware modification. This means that TLPS will benefit from a substantial existing ecosystem, which can be utilized almost immediately."

We question the validity of this statement for a number of reasons. First of all it will often take more "than a firmware" upgrade to change the operations of a previously FCC approved device to enable the compliant operation in an additional band. The majority of embedded devices will also simply lack the ability to any kind of updates. Finally, in those cases where an upgrade could be done, we wonder whether the change of functionality to devices in the market after FCC approval would be within the tolerable amount of change for the original approval to still apply, and we are also concerned in those cases how the costs of such upgrades will be borne.

Loss of 2473-2483.5 MHz takes a toll on the whole band

Globalstar requests exclusive rights to 2473-2483.5 MHz and the interference into that band would appear to require Bluetooth devices to back off further as well as Wi-Fi devices that would have to cease the use of Channel 11. With the interference requirements it would in other words mean that additional congestion and further co-existence difficulties for Bluetooth since the traffic will need to be redeployed to the remainder of the band somehow. End user experience would suffer greatly.

The universal value of 2.4 GHz unlicensed spectrum

The 2400 - 2483.5 MHz band is globally harmonized for unlicensed use. To end users around the world it is the spectrum for much of their personal and professional data transfer. It is a spectrum where technology innovation and entrepreneurship is outstanding. Studies have further shown that it is unique due to the implemented coexistence measures between technologies in the band (e.g Bluetooth and Wi-Fi). According to Richard Thanki [1] the coexistence of different technologies in the band has lead to that "*the aggregate spectral efficiency of the 2.4GHz band is at least 30 times greater than the overall efficiency of any cellular band*". If some of the previously harmonized spectrum gets licensed to a single firm by FCC it would be very disruptive

[1] Richard Thanki, June 2012: The Economic Significance of License-Exempt Spectrum to the Future of the Internet

and be counter to years of efforts to harmonize spectrum rules in order to enable innovations and more efficient use of spectrum.

CONCLUSIONS

The Bluetooth SIG appreciates the Commission's consideration of our concern with the Globalstar Petition for Rulemaking. We are concerned that the petitioned changes would negatively impact hundreds of millions of users of Bluetooth devices as well as the entire Bluetooth ecosystem which includes device manufacturers and the chipset manufacturers that support these devices. Should the Commission proceed with the NPRM, we hope these issues are fully addressed in the proceeding, so that the concerns of all involved may be heard before granting any changes to this spectrum.

On behalf of the Bluetooth SIG,

Mark Powell

Executive Director

Bluetooth SIG, Inc.

425.691.3530

mpowell@bluetooth.com